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THE PLANT DISEASE REPORTER

Issued by

THE PLANT DISEASE SURVEY, DIVISION OF MYCOLOGY AND DISEASE SURVEY
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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

IN THIS ISSUE

The effect of the root-knot nematode on celery and on Lima beans is reported in articles contributed by G. K. Parris, page 234, and by G. K. Parris and R. A. Jehle, page 235. Control of the nematode by summer plowing, page 235, is abstracted from an article by G. H. Godfrey. F. M. Gordon reports occurrence of nematodes on Long Island, page 236.

Reports on the development of late blight are given on page 237. Incidence of the disease in 1942 is reported from New York and from Kentucky page 239. A. H. Eddins sends a report on potato diseases in the Hastings section of Florida this season, page 240.

Freeman Weiss discusses the cause of potato decay in early shipments, page 242.

W. W. Ware reports the results of a limited survey for diseases of canning peas in Wisconsin this year, page 244.

The dead-arm disease of grapes is unusually prevalent in Illinois this year, according to H. W. Anderson and A. S. Colby, page 245.

Fruit diseases reported by M. C. Richards, page 247, include the first record of strawberry red stele in New Hampshire. R. S. Kirby reports fruit diseases in Pennsylvania, page 247.

Various species of Pythium are important among causes of root rots of grasses in the Northern Great Plains, according to Roderick Sprague, page 248.

Scab is reported as more prevalent than usual on wheat and barley in Pennsylvania, Ohio, and Illinois, page 250.

R. J. Haskell, R. W. Leukel, and C. J. Otten report results of a national hemp seed-treatment program, page 252.

Glomerella cingulata was found by Freeman Weiss associated with rhododendron die-back and canker, page 254.

Malcolm A. McKenzie reports Verticillium wilt of maples as unusually prevalent in Massachusetts, page 255.

Brief notes, page 255, include reports on unusual occurrences of spinach rust and pea anthracnose, a virus disease of red currants in Ohio, strawberry red stele in New York, wheat diseases in Pennsylvania, wheat flag smut in Washington, a cereal disease survey trip in California, sweet corn bacterial wilt in Pennsylvania, ash rust in New Hampshire and Massachusetts, a powdery mildew on Doronicum in California, and tobacco black shank in Virginia, a request for information on the occurrence of scab of wheat and barley, and some corrections.

June weather, page 258.

REDUCTION IN THE YIELD OF CELERY CAUSED BY THE ROOT-KNOT NEMATODE

G. K. Parris

Inasmuch as data that show the reduction in yield of crop plants by the root-knot nematode (Heterodera marioni (Cornu)Goodey), are few and far between in the literature, the following observations are thought worthy of presentation.

Recently, this nematode has caused appreciable losses on local celery. When the crop was about half grown, the grower requested help from this station. His crop had slowed up in its growth, the leaves were paler green than normal. At that time the presence of nematodes on the roots was not suspected and the use of additional fertilizer was recommended.

While taking data on plots where spray tests, with bordeaux and some of its more recently developed substitutes, for the control of the Cercospora-Septoria leaf-spotting fungi had been installed, it was noted that part of the sprayed area (one replication) was severely diseased with H. marioni, while another replication was almost free from galls on the roots. Other replications had intergrading degrees of infection.

The plants in the different spray treatments and different replications were pulled, weighed without trimming, then trimmed according to commercial practice (roots left intact), and reweighed. The data are presented in Table 1 and show that H. marioni, under the conditions that prevailed locally, may cause a 22 to 36% reduction in yield of untrimmed celery, and a 24 to 48% reduction in yield of trimmed celery.

Table 1. Reduction in yield of celery due to the root-knot nematode.

Fungicide	Nematodes relatively absent		Nematodes abundant		Reduction in yield due to nematode attack - %	
	Weight of 60 plants before trimming (lbs.)	Loss by trimming %	Weight of 60 plants before trimming (lbs.)	Loss by trimming %	Before trimming	After trimming
Check	43.8	53	30.0	52	31	30
Bordeaux	48.7	32	37.7	41	22	32
Material A	51.0	46	34.5	47	32	33
Material B	51.0	36	39.2	36	23	24
Material C	48.2	33	37.7	38	22	28
Material D	53.2	36	33.7	48	36	48

VIRGINIA TRUCK EXPERIMENT STATION

ROOT-KNOT NEMATODE ON LIMA BEANS IN MARYLAND

G. K. Parris and R. A. Jehle

On June 15 of this year, specimens of lima bean plants, variety Fordhook, showing severe galling of the roots, were given to the senior author for examination by Dr. Sam Thornton, advisor to the F. S. Royster Guano Co., Norfolk branch. The beans were part of a 10-acre planting at Salisbury, Maryland, where approximately 4 acres were affected.

Diseased plants were growing on the highest and sandiest parts of the field and were stunted, paler green than normal, and generally unthrifty in appearance. On heavier soil the beans were normal in appearance and galling of the roots was insignificant or absent.

Dr. Thornton's attention was called to the field in the belief of the grower that his plants were suffering from a nutrient deficiency. Investigation showed that, despite an amount of phosphorus in the soil adequate for normal growth, the stunted and galled plants were deficient in this element, whereas normal-appearing plants were not deficient.

Laboratory examination showed that the galls were caused by the root-knot nematode, Heterodera marioni (Cornu) Goodey. An abundance of mature females and eggs and a few active larvae were present. The presence of eggs indicates that infection of the bean roots occurred some 30 to 35 days previously, or about May 10-15. The beans were planted as soon as danger from frost, to which Fordhook is particularly susceptible, had passed, somewhere between April 30 and May 10; in other words, there were active larvae present in the soil when the seeds were planted. The case history of the soil shows that it had lain fallow all winter, probably with one or more occasional plowings, and that the previous summer and fall (1942) the land had supported snap beans, soy beans, and cowpeas in the order given.

The loss sustained by the grower in the Salisbury area was approximately 20% according to Dr. Thornton. Abnormally high temperatures and a prolonged drought on the Eastern Shore of Maryland during June undoubtedly accentuated the damage.

VIRGINIA TRUCK EXPERIMENT STATION AND MARYLAND AGRICULTURAL EXPERIMENT STATION

OTHER REPORTS ON NEMATODE INJURY

CONTROL OF ROOT-KNOT BY SUMMER PLOWING: In the June 1943 issue of Texas Farming and Citriculture (19(12): 4. June 1943), G. H. Godfrey of the Lower Rio Grande Substation reports a "Striking Reduction of Nematode Infestation" after a severely infected crop by 3 deep summer plowings at intervals of a week to 2 weeks depending on the weather. The test reported was conducted on a heavily infested field in Hidalgo County after harvesting a badly attacked crop of beans. The first plowing, in early June, was performed in such a way as to turn the plants over, exposing as much as possible of the infected roots to the sun's

heat and drying to kill probably most of the nematodes in the roots. After several days' exposure, when the roots were thoroughly dry and hard, a second deeper plowing turned the soil over completely, subjecting nematodes in the deepest layer and those already hatched to similar treatment. After the third plowing, still deeper, another week or 10 days later, probably all but a small proportion of the original nematode population was killed. All 3 plowings were done in 100° weather to get the most from the sun's drying and heating powers.

A small portion of the field was left without summer plowing as a check on the effects of the treatment, and another small portion was plowed only twice. Both plowed and unplowed portions were given the usual preparation for a fall tomato crop, and planted with nematode-free plants. The results were striking. On the untreated portion stand was poor and plants were undersized with small stems and branches resulting in small fruiting area, and very heavily galled roots, large in diameter and knobby and only 1/5 as long as on nematode-free plants. On the treated portion plants were large and vigorous, with large stems and branches and good fruit production, long and slender roots with few root galls mostly on small branch rootlets.

There was a striking difference in yield as shown by comparing the gross returns:

Untreated.....$146 per acre
Plowed twice.....$250 per acre
Plowed 3 times.....$266 per acre

When the costs of the 3 extra plowings, not over $9 per acre, and of 2, $6 per acre, are deducted the profits from the treated portion are $111 and $98 per acre respectively. These differences are so great that they cannot be due to chance.

These striking results led to the following recommendations:

"(1) Plow up a badly nematode-infested spring crop in such a way as to expose the roots to sun heating and drying.

"(2) After a week or 10 days plow again 1-1/2 or 2 inches deeper.

"(3) Give a third plowing a week or 2 later, still deeper.

"(4) Govern the timing of all plowings by the weather; the higher the temperature and the lower the humidity, the more rapidly will the nematodes be killed.

"(5) In the event of rains, delay plowings until the drying effect of a period of sunshine has been obtained on the top soil.

"(6) Whenever feasible, follow the drying period with the planting of a green-manure crop, which is to be plowed under, with added nitrogen and perhaps superphosphate, at least a month before time for planting a fall crop. Plenty of moisture, supplied by irrigation if necessary, should be present to aid in the decomposition of the organic matter."

NEMATODES ON POTATOES AND LETTUCE IN NEW YORK: Well-developed golden potato nematodes [*Heterodera rostochiensis*] are prevalent in the infested areas of Nassau County (Long Island). Root-knot [*H. marioni*]

swellings were found on some lettuce plants. (F. M. Gordon, from Weekly News Letter, July 6)

PROGRESS OF LATE BLIGHT

Several weeks of increasingly warm and generally somewhat drier weather apparently checked the spread of late blight, at least temporarily. The 2 weeks ending July 13, however, were again more favorable for blight development.

A general, approximate idea of temperatures in relation to spread of late blight so far is given in the accompanying tabulation of favorable and unfavorable temperatures as indicated by data in the Weekly Weather Crop Bulletin.

Mean Temperature in Relation to Potato Late Blight Spread

Favorable (Up to 75° F.)	Too high (Above 75° F.)	Change from Preceding week
Week ending June 15:		
Generally favorable.		None N. New England; S. New England to Va. & Ohio decrease; Mich. & westward increase.
Week ending June 22:		
New England, N. & W. N. Y., W. Pa., Mich., Wis., N. Minn., N. Dak., to W. Nebr., & Colorado.	S. N. Y., E. & Cent. Pa. to Va., Ohio & S. E. Mich.; S. Minn. & adj. Wis., Cent. & W. Iowa & E. Nebr.	General increase.
Week ending June 29:		
N. New England; Lake Shore of N. Y., to N. Dak. south to N. Nebr. & Colorado.	S. New England to Va.; S. Mich. & Ohio to S. Minn., Iowa & Cent. & S. Nebr.	General increase except S.Dak. same; N. Dak. decrease.
Week ending July 6:		
Generally favorable.		Marked decrease; except increase in N. Dak.

Favorable (Up to 75° F.)	Too high (Above 75° F.)	Change from preceding week.
Week ending July 13:		
New England, N. Y., W. Pa., N. J., Ohio, Mich., Ill., Wis. except W., N. Minn., W. Nebr., N. Dak.	Cent. & E. Pa., Va., Iowa, W. Wis., E. Minn., E. Nebr., Colo., S. Dak.	Increase in all.

Following are the reports received:

MAINE: Mr. Bryce Jordan found late blight in potato refuse piles at Houlton, Maine on June 8, 9, and 10. The disease is probably present in most of the refuse piles by now. (Reiner Bonde, Maine Agricultural Experiment Station, Orono, Maine.)

CONNECTICUT: We have made a rather thorough search for late blight along the shore of Long Island Sound and in the Connecticut Valley, but we have not found it yet. We have found a very widespread although not serious symptom which appears to be a scorched foliage associated with some very hot spells that we have just had following the cool wet spring. (James G. Horsfall, June 25)

NEW YORK (LONG ISLAND): Late blight was found in 2 fields on the North Fork of Suffolk County June 10, according to James E. Dewey, and R. W. Roth reported it also in 2 fields on the North Shore of Suffolk County (June 21). Weather had been ideal, with cool nights, heavy dews, and rains, but later hot dry weather checked its spread (June 28). However, Dewey reported a gradual increase in Suffolk County with very favorable conditions since a 4-hour rain on June 29. (July 6) (Summarized from Weekly News Letter for dates given)

Dr. Karl H. Fernow has just returned from a trip to Long Island and reports that he found late blight on June 15 in a field at Glen Head, Nassau County, and on June 16 at Southold, Suffolk County. On June 17 Mr. C. M. Wright, Field Assistant working on the South fork of Suffolk County showed him blight obtained in that section. I suspect that blight has become well established in several places on Long Island. (M. F. Barrus, Cornell University, June 21)

PENNSYLVANIA: Late blight was found in Lehigh County on June 21 and in Clarion County on June 23. Weather has been favorable for the development of the disease, but at present it is somewhat unfavorable for its spread. (O. D. Burke, Pennsylvania State College, July 5)

CENTRAL STATES: June 26--So far late blight has been found only once in commercial fields in Nebraska by Dr. W. H. Jensen. Dr. Jensen's survey in many other fields failed to show any more late blight.

Professor W. J. Henderson in Colorado reported only this week suspicious lesions on potato stems, without sporulation.

July 5--Dr. C. J. Eide of Minnesota reported as follows: "Late blight definitely identified as such was observed on potatoes grown on peat 50 miles north of St. Paul on June 22. It was found at the University Farm apparently spreading from an experimental potato dump on June 23."

Dr. J. H. Muncie of Michigan reports no blight found so far in any section of the state.

Dr. W. F. Buchholtz of South Dakota reports no blight in spite of diligent search in the vicinity of Brookings and the County just north.

In Iowa spraying for late blight is in full blast at the present time. Dr. E. L. Waldee was in the field all last week but found no positive evidence of late blight. In spite of this fact we are inclined to believe that foci of infection occur especially on peat and muck soils. (I. E. Melhus, from letters sent to members of the War Emergency Committee, Upper Mississippi Valley Plant Pathologists)

POTATO LATE BLIGHT IN 1942

In response to the request in the preceding issue of the Reporter, Dr. M. F. Barrus and Dr. W. D. Valleau have sent reports on occurrence of late blight in New York and Kentucky, respectively, last year.

LATE BLIGHT OF POTATOES IN NEW YORK STATE DURING 1942: Late blight last year appeared early in New York State. It was first found on June 18 on the South Fork of Long Island where it occurs nearly every year. About July 18 to 22, it was found in Nassau, Franklin, Tioga, and Erie counties. A week later it was reported from Chenango, Ulster, Wayne, Allegany, Orleans, and Livingston Counties. By the end of the first week in August, it was already well developed in Niagara, Genesee, Catteraugus, Cayuga, Tompkins, Madison, Lewis, and Otsego counties. Not long afterward, it could be found in all the potato-growing counties of the State and was responsible for a considerable loss from the dying of the vines, except in northern New York where the damage was slight.

On June 22, July 13, and August 10, warnings were sent county agents of the danger of late blight, its prevalence after it appeared, and control measures that should be taken. Commercial growers endeavored to protect the vines with copper sprays or dusts and succeeded fairly well in bringing the crop along until the tubers were a good size even though considerable blight occurred. It was expected that the rains of late summer and fall would make conditions favorable for tuber rot but this did not take place in protected fields to any considerable extent. The yields obtained from such fields were exceptionally good. There was a great deal of rot in fields and garden patches that had

not been protected against blight. Complaints were received all winter from small growers that their potatoes had rotted badly. Many of these growers were compelled to buy eating potatoes when, in previous years, they grew their own supply and often had some to sell. Some rot was also found during the winter and spring in stored commercial stocks, although this loss was not large in most cases.

The yield of small growers is not included in the official statistical reports of acreage and yield of potatoes, yet, in the agregate, this is large. No doubt the partial or complete losses caused by late blight to tens of thousands of these growers throughout the State was an important factor contributing to the scarcity of potatoes during the spring of 1943. (M. F. Barrus and K. H. Fernow, Cornell University)

LATE BLIGHT IN KENTUCKY IN 1942: We received specimens of Cobbler potatoes from the Lexington and Louisville areas last winter, which had the typical bluish depressed areas. When the decaying area was cut into and the potato placed in a moist chamber, the typical Phytophthora fruiting bodies developed. Evidently the disease was present in the second crop of 1942 although we had no reports of it in the field. The disease may be considered rare in Kentucky although I have had specimens of decaying tubers on 2 or 3 occasions previously. (W. D. Valleau, University of Kentucky)

POTATO DISEASES IN THE HASTINGS SECTION OF FLORIDA THIS SEASON

A. H. Eddins

The development of most diseases was inhibited by either the coolness or the lack of moisture, or both, that characterized this year's growing season, and little loss resulted. However, late crops suffered from lenticel rot of the tubers that developed after a 6-inch rain falling over a 10-day period in late May. As much as 20% loss from this cause occurred in some crops, but the average was 4%.

Losses are given in the accompanying table which lists the percentage losses from potato diseases in this section during the past 12 seasons, and the average for the period.

FLORIDA AGRICULTURAL EXPERIMENT STATION

Table 1. Estimates of Losses Caused by Potato Diseases in the Hastings Section from 1932 to 1943, Inclusive

Disease	Loss In Percent												
	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	Avg.
Late Blight	2.0	15.0	8.0	0.0	4.0	15.0	2.0	2.0	T*	4.0	1.0	T	4.4
Rhizoctonia	2.0	4.0	5.0	4.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0	2.6
Brown Rot a/	1.5	2.0	3.0	8.0	2.0	1.0	3.0	3.0	1.0	0.5	0.2	0.5	2.1
Early Blight	0.5	T	0.5	T	T	T	T	T	T	T	T	T	T
Common Scab	0.5	0.5	0.5	0.5	0.5	0.5	1.0	0.5	0.5	0.5	T	T	0.5
Sclerotinia Rot		T	0.5	T	T	T	T	T	T	T	T	T	T
Southern Wilt	0.5	0.5	0.5	0.5	T	T	1.0	0.5	T	T	T	0.1	0.3
Blackleg		0.5	0.5	0.5	2.0	4.0	0.5	0.5	1.0	0.5	3.0	0.5	1.1
Fusarium Seedpiece Rot			T	T	0.5	T	T	T	T	T	T	T	T
Mosaic and Virus	1.5	1.0	1.0	1.0	1.0	1.0							1.1
Rugose Mosaic							4.0	0.5	0.5	0.2	T	T	0.9
Leafroll							2.0	1.0	0.5	T	T	T	0.6
Spindle Tuber								0.5	T	T	T	T	0.1
Bacterial Ring Rot						5.0	1.0	0.5	0.5	T	T	T	1.0
Lenticel Rot b/						2.0	T	T	T	T	T	4.0	0.9
Hair Sprout							T	T	T	T	T	T	T
Total	8.5	23.5	19.5	14.5	13.0	30.5	16.5	11.0	6.0	7.7	6.2	6.1	13.6

* Trace; less than 0.1%

a/ *Bacterium solanacearum*; b/ *Erwinia carotovora*

DECAY IN EARLY POTATO SHIPMENTS

Freeman Weiss

A news item in a Washington, D. C. daily of June 15 stated that "rotten potatoes, 600,000 pounds of them, arrived on the Washington market from California, Florida and South Carolina yesterday--the result of a Government regulation preventing the icing of the potatoes in the cars." It was stated that 50 to 60% of the potatoes were found rotten when the cars were opened, and the monetary loss (for the spoiled produce) was estimated at $24,000. Doubtless similar statements appeared in the press of other Eastern cities. Time Magazine reported on June 21 that "Sixty carloads of potatoes shipped to Manhattan from the South to ease the shortage rotted on the way because the Interstate Commerce Commission, backed by the ODT, banned the use of refrigerating ice.------After the damage was done, ice was found for future shipments."

On June 16 a follow-up statement attributed to "an ODT spokesman" appeared in Washington, D. C. newspapers terming the claims of spoilage of 60% in these potatoes an exaggeration, and claiming that "inspectors of the Department of Agriculture found not more than 6% of the spuds rotten." The statement further averred that adverse weather had caused a delay in the potato harvest, and that potatoes were shipped green and were of lower quality than usual because of "the wet and hot weather". It was also stated that under normal conditions about two-thirds of the southern potatoes are shipped in ventilated cars, and about one-third with initial icing.

These conflicting claims, and the extraordinary interest in the condition of the new potato crop in the Southeastern States this year, seemed to warrant a pathological investigation.

As to weather conditions in the area chiefly concerned -- northern Florida and Alabama to South Carolina -- the Weather Bureau's Weekly Weather and Crop Bulletin for June 8 showed plus departures from normal temperatures of 4° to 10° F., the actual means varying from 83° to 87°. Precipitation from Jacksonville, Florida to Charleston, South Carolina was 0 or only a trace, indicating a deficiency for the week of slightly over 1 inch. During the week ending June 15, plus temperatures departures occurred again, but were only 2° to 4° above normal. Precipitation was scanty (0.14 inch) at Jacksonville but heavy at Savannah and Charleston (1.36 and 1.69 inches respectively). Probably most of the potatoes in which heavy spoilage was reported were dug and shipped before these rains occurred. Warm weather may have been a factor, but wet weather probably was not, in accounting for the rot. In fact the Southeastern Coastal Plain below Charleston experienced a precitation deficiency for 5 weeks prior to June 8 and for 2 weeks (except in northern Florida) subsequent to June 15.

Icing of early potatoes shipped from the South is a comparatively recent development, and it has been chiefly in the Hastings, Florida district that itsadoption on a commericial scale has occurred. With the increase of interest in icing in other potato districts where adequate facilities have not been developed, a demand for ice arose this year

that would have been difficult to meet even under normal conditions of labor and transportation supply.

Inspection records for carlot potato shipments arriving on the market during the period June 1 to 22 were made available through the courtesy of F. G. Robb of the Fruit and Vegetable Branch of the Food Distribution Administration. It should be emphasized that these records are not necessarily representative of all the potatoes received since inspection is made only upon request, which usually betokens a question as to condition. The percentage of decay revealed by these inspections, covering 87 cars in all, ranged in shipments from different states as follows:

Source of shipment	No. of cars inspected	Percentage of decay
Arkansas	5	Less than 1 to 4
California	13	Less than 1 to 35
Florida	39	1 to 35
Louisiana	4	Less than 1 to 60
Mississippi	1	2
North Carolina	10	2 to 65 (some sacks 100%)
South Carolina	46	2 to 35
Texas	6	3 to 65

Most of the decay was identified as slimy soft (bacterial) rot, with occasional reports of southern Sclerotium rot, leak, and late blight. The spoilage in certain refrigerated cars (of which 14 were inspected) reached 18 to 20%, and in one 35%, but in most instances was only 1 to 5%. These potatoes came mostly from California where they are normally harvested and shipped during very warm weather. However, decay in non-refrigerated cars also varied greatly, from less than 1% to nearly total. Decay exceeding 10% occurred somewhat less frequently (28 cars) than amounts below this level (31 cars). Reporting his observations on potato shipments during this period, C. O. Bratley of the Division of Fruit and Vegetable Crops and Diseases writes from New York City as follows:

> "It is certainly true that there has been a lot of decay in potatoes from the southern States. I have never seen Sclerotium rot so prevalent. It was found in quantity on Alabama, Florida, South Carolina and North Carolina potatoes. Leak and Fusarium rots were seen occasionally, but bacterial soft rot is most prevalent of all. Judging by the inspection reports the initial icing now given in South Carolina shipments has had no apparent effect on the decay. Many inspections have been requested in the past two weeks. The most striking result is the variation from car to car indicating that source of tubers or methods of handling are more important than the refrigeration received. Some cars show 1 or 2 percent decay; most show from 2 to 25 percent with the average around 10 to 12 percent."

He further states :

> "It would have been interesting to have observed the handling operations in South Carolina. My guess is that some growers, because of labor, left potatoes in the field much longer than others, and that the decay was not wholly blamable on no refrigeration."

Mr. Robb also comments:

> "The poor grading, handling and loading undoubtedly contributed to the development of this decay. We have also had advice that, on account of shortage of field labor, many potatoes were not picked up as promptly after digging as is necessary to avoid sun scald which is so commonly followed by slimy soft rot."

It appears from all the evidence at hand that the decay in potatoes this spring was primarily due to conditions associated with harvesting the crop, and secondarily to conditions during transportation. When potatoes are dug immature, as the new crop often is, and have been exposed to sunburn during harvesting, and furthermore, are bruised, wet and warm when packaged, they will of course carry poorly whether shipped with initial icing or not. If potatoes are harvested in favorable weather and are promptly gathered, graded, and packaged for rail shipment in accordance with proven practice, they may be expected to carry satisfactorily under ordinary transportation conditions. On the other hand, icing may contribute materially to their keeping quality when they are shipped in hot weather.

Owing to price and labor conditions this year, most of the potatoes shipped from the South were not graded, and shipping point inspections were far short of the usual number. Had grading been practiced as usual, under the control of shipping point inspection, the decay in potatoes reaching markets probably would have been avoided and valuable transportation facilities would have been conserved.

DIVISION OF MYCOLOGY AND DISEASE SURVEY

CANNING PEA DISEASES IN WISCONSIN IN 1943

W. W. Ware

There has been no general organized survey of pea diseases this season, but a total of 35 fields has been examined on visits to canneries and trips to experimental plots. Most of the fields were Alaskas and were examined just before the beginning of the canning season. The accompanying summary gives the diseases found and their relative severity.

Aphanomyces root-rot [A. euteiches], as in 1942, was the most important disease. However, it was not as damaging as in 1942. Only 6 of 35 fields were severely diseased, as compared to 87 of 343 in 1942 (Wis. Research Bulletin 145). There was also much less water damage except in local areas.

Pea Diseases - 1943*

DISEASE	None	Trace	Slight	Moderate	Severe
Ascochyta	8	7	19	1	0
Anthracnose	23	2	7	2	1
Bacterial blight	14	1	11	5	4
Septoria blight	32	1	2	0	0
Downy mildew	32	2	1	0	0
Root-rot	21	4	2	2	6

*35 fields

The major foliage diseases, Ascochyta, anthracnose [Colletotrichum pisi], and bacterial blight [Pseudomonas pisi], were more common in the fields than in 1942, and also more severe. In many fields their progress up the plants was halted by a period of dry weather just before canning, so that they were not so noticeable.

Further evidence was found that these disease organisms are again being brought in on western-grown seed since some of the severest affected cases were grown from western seed on land which had not grown peas for 5 years or more.

As in 1942, near-wilt [Fusarium], and viruses did not appear to any extent in the Alaskas. Both have been seen in experimental plots during the past week, and may be expected to show up in the sweet crop.

UNIVERSITY OF WISCONSIN

DEAD ARM DISEASE OF GRAPE IN ILLINOIS

H. W. Anderson and A. S. Colby

An unusually severe outbreak of dead arm (Cryptosporella viticola) has appeared in the Illinois Station vineyard at Urbana and several specimens have been received from other sections of the State. The red to purple elongated lesions of the fungus are extremely numerous on the new growth, especially on the lower third of the shoots which developed fairly early. The disease was first noticed in May, but was well advanced when first seen. Abundant pycnidia were found on the 2- and 3-year-old wood. Cultures from the lesions on this year's shoots yielded the Fusicoccum stage of the fungus. No fruiting bodies have been observed on the shoot lesions and these appear to be healing by growth of tissues beneath the lesions. No decided stunting or yellowing of the leaves has occurred to date except on vines previously weakened (probably by attacks of the disease in other years).

In 1941 it was noticed that this vineyard showed symptoms of dead arm in that short shoots with yellow, crinkled leaves were observed on many of the vines and later some arms died while others showed partial recovery.

Record on Dead Arm Infection of 56 Varieties of Grape
June 16, 1943, University of Illinois Station Vineyard

Based on amount of spotting found on 1943 shoots only. Examination of full row of Concord showed fairly even distribution on all vines.

Very Severe	Severe	Moderate	Light	Very Light
Brighton	Worden	Ontario	Portland	Hartford
Sheridan	Catawba	Concord	King	Bacchus
Gaertner	Wyoming	Moore Early	Carman	Clinton
Delaware	Salem	Daisy	Marion	Norton
Athens	Herbert	Champion	Barry	Buffalo
(5)	Moyer	Agawam	Isabella	Yates
	Lindley	Campbell Early	Caco	Westfield
	Champagne	Niagara	Hubbard	(7)
	Berckmans	Fredonia	Geyer	
	Goff	Hector	Golden Muscat	
	Dracut Amber	Beta	Van Buren	
	Winchell	Geneva	(11)	
	Goethe	Ruby		
	(13)	Janesville		
		Lutie		
		Vergennes		
		August Giant		
		Urbana		
		Catawba		
		Lucile		
		(20)		

Pycnidia of Fusicoccum were found on these canes. In 1942 there was little evidence of the trouble on the new growth.

The severe outbreak of the disease this season is due, no doubt, to the very heavy and continuous rains of May.

It is evident that practically every vine of most of the varieties in the vineyard has been infected over a period of at least 4 or 5 years, and ordinary control measures seem hopeless.

Advantage was taken of the abundance of new shoot lesions this season in an attempt to evaluate the relative susceptibility of some 56 varieties in the Station vineyard. Several long rows of 60 vines each of 5 of the standard varieties gave an opportunity to determine variation in different parts of the plantation. It was decided that no marked variation occurred when at least 5 vines of a variety could be examined. Most of the varieties had at least 10 vines for examination. It is probable that a number of factors are involved in the relative severity of the disease this season and the accompanying table is intended only to indicate the conditions at this date as reflected in the new shoot infections.

DEPARTMENT OF HORTICULTURE, UNIVERSITY OF ILLINOIS

WINTER INJURY AND DISEASES OF FRUIT CROPS IN NEW HAMPSHIRE

M. C. Richards

Peach trees and ornamental trees and shrubs were injured by the cold weather of last winter in New Hampshire. Many peach trees were completely killed; grapes and some flowering shrubs were killed to the snow line. The blossom and leaf buds on lilacs, maples, and beech were frozen or injured.

The weather has been unusually favorable for the development of apple scab [Venturia inaequalis]. Heavy infections have been found in a few commercial orchards. In some orchards where mild sulfurs have been used, only a slight amount of scab has been found. There will be much less liquid lime sulfur used in the State this year than usual. Although mature ascospores were first found on May 13, many asci were found last week (June 11) which contained immature ascospores.

Red stele (Phytophthora fragariae) of strawberry, which has not been previously reported from New Hampshire, was found last week in a small field of the variety Premier at Durham. The grower reported that he had seen wilting similar to that now present in a few plants about 4 years ago. The plants are located on heavy soil with poor drainage. Vigorously growing new plants produced last year blossomed normally this spring, but then, within 2 weeks, these plants wilted and died. The plants in the diseased field will produce about 25 quarts of berries this year, while neighboring rows of similar length last year produced 250 quarts. (University of New Hampshire. June 17)

FRUIT DISEASES REPORTED FROM PENNSYLVANIA

R. S. Kirby

Apple Scab (Venturia inaequalis) is very severe in the northern part of the State and above normal in all other parts except the area around Philadelphia where it was way below normal in 1942. Heavy infection in the North came in before and after petal-fall. In the southern part the heavy infection period was between petal-fall and second cover. Lesions were first observed May 10 in York County.

Effect of sprays on Scab occurrence in Delaware County, Pennsylvania.
Variety Stayman

Sprays applied	Percentage Scab	
	On leaves	On fruit
All sprays	5.8	.3
Unsprayed	51.0	48.
Only one spray applied:		
Combined delayed-dormant pre-pink	31.4	46.
Pink	28.3	16.
Petal-fall	15.3	5.
1st cover	41.0	20.

Frog-eye leaf spot (Physalospora obtusa) is severe and above normal this year. Spraying reduced the amount to 3.5% as compared to 36% in unsprayed but did not entirely prevent leaf spot. Leaf spots were first observed May 25 in Delaware County.

Less fire blight (Erwinia amylovora) is showing up on apples than for several years. It is most severe in the south-central part of the State. The infection came late being first observed on June 7 in Franklin County.

Apple blotch (Phyllosticta solitaria) is starting to show up early. It was found on June 22 at Esterely, Berks County.

Dr. L. O. Weaver found bitter rot (Glomerella cingulata) on apples June 23 in Carbon County.

A small amount of peach leaf curl (Taphrina deformans) could be found in most counties but it was not severe. It was first observed by G. L. Zundel on May 13 in Franklin County.

Some peach blossom blight (Monilinia fructicola) was observed but there was less than in most years. It was first observed on May 25 at Lima, Delaware County. The brown rot fungus was found on May 28 to be blighting blossoms of sour cherry. Brown rot will be above average this year on sweet cherries. On June 11 brown rot was found rotting the young green choke cherries (Prunus virginiana) at Ringold, Jefferson County.

Cherry leaf spot (Coccomyces hiemalis) is unusually severe in all parts of the State.

Grape black rot (Guignardia bidwellii) infection on leaves in all parts of the State is heavier than for several years. It was first observed on June 10 in Bradford County, and was also common on five-leaved and Boston ivy [Ampelopsis]. (Reported by Kirby and Weaver) PENNSYLVANIA STATE COLLEGE, JUNE 29

ROOT ROTS OF GRAMINEAE IN THE NORTHERN GREAT PLAINS, 1940-43

Roderick Sprague

The results of the past 3 year's work by several investigators on seedling diseases of cereals and grasses in the Northern Great Plains, show that the main cause of the "seedling blight" of grasses, which develop during May and June, is the fungus known either as Pythium arrhenomanes Drechsl. or P. graminicolum Subrm.[1/-6/] The injury caused

1/Sprague, R. Foot and root rots of small grains and grasses in the Dakotas. U. S. Dept. Agr. Pl. Dis. Rptr. 24: 343-345. 1940.
2/Sprague, R. Cereal root-rot investigations and control factors. North Dakota Agr. Exp. Stat. Bimo. Bull. 3(3): 19-22. 1941
3/Buchholtz, W. F. Gross pathogenic effects of Pythium graminicolum, Pythium debaryanum and Helminthosporium sativum on seedlings of crested wheatgrass. Phytopath. 32: 2. 1942 (Abst.)
4/Sprague, R., and R. E. Atkinson. Cross inoculations with Pythium arrhenomanes from cereals and grasses in the Northern Great Plains. Phytopath. 32: 17. 1942 (Abst.)
5/Vanterpool, T. C., and R. Sprague. Pythium arrhenomanes on cereals and grasses in the Northern Great Plains. Phytopath. 32: 327-328. 1942.
6/Vanterpool, T. C. Pythium root rots of grasses. Sci. Agr. 22: 674-687. 1942.

by soil-borne parasites of Gramineae is not confined to this one fungus, however. It has been found by the writer that certain fungi, including Helminthosporium sativum P.K.B., Pythium debaryanum Hesse, P. ultimum Trow., P. irregulare Buis., and Fusarium scirpi var. acuminatum (Ell. & Ev.) Wr., sometimes cause the seed to rot in the ground, thereby reduring the stand and producing the conditions known as pre-emergence killing. In the case of P. debaryanum, if weather conditions are at all favorable after emergence, the plants quickly recover with no observable symptoms on most cool-temperature grass hosts. For this reason, in addition to the fact that P. debaryanum is almost omnipresent, the belief has developed that this sphaerosporangial species of Pythium is of no importance on Gramineae.

Inoculation trials during the past winter have shown that Pythium arrhenomanes is the most important parasite of grasses in the Northern Great Plains, but it has been determined also that pre-emergence killing which is always important, is due to a number of other fungi as above mentioned. In addition to this pre-emergence killing, P. debaryanum, P. ultimum, and P. irregulare cause definite root necrosis and stunting in sorghums, millets, and some small seeded grasses. The problem is further complicated by the fact that this group of fungi is not as uniformly pathogenic as is P. arrhenomanes. All grades of pathogenicity in the isolates have been encountered, from completely nonparasitic to moderate root necrosis in wheat, which host usually is highly resistant. To clarify this group, it is necessary to test the pathogenicity of these organisms on several grasses and cereals and on a number of nongrass hosts as well. For this purpose, the following twenty indicator hosts are being used: Rival wheat, Victory oats, Turghai proso millet, Black Amber sorghum, Northwestern Dent field corn, Standard crested wheatgrass, Agropyron intermedium (Host.) Beauv., Canada bluegrass, blue grama, Bromus arvensis L., B. tectorum L., Hordeum brevisubulatum (Trin.) Lk., Turkestan alfalfa, Ohio Canner beets, Burpee's Wax snap bean, Chinese cabbage, New England pie pumpkin, wild salsify, Earliosa tomato, and Hungarian sunflower. The results to date indicate that the P. debaryanum group (sphaerosporangial forms) considerably complicates the rotation problem, because isolates of these fungi from Gramineae destroy many of the nongrass tester hosts and vice-versa. For example, it has been found that old orchard soil that had been clean cultivated for about 25 years on the Field Station at Mandan, North Dakota, contained sufficient P. debaryanum to reduce the emergence of alfalfa 50%; proso millet 55%; wheat scarcely at all; and crested wheatgrass about 16%.

In relation to the tester hosts, above listed, it is interesting to note that some, such as Bromus arvensis and common downy cheatgrass (B. tectorum) are strongly resistant to P. arrhenomanes, but are susceptible to some isolates of the P. debaryanum group at the time of seed germination.

Pythium arrhenomanes continues to show very little racial tendencies in the Northern Great Plains, but one aberrant form has been isolated from irrigated barley from Newell, South Dakota. This isolate is highly pathogenic to the usually resistant Agropyron intermedium. Under

the conditions of the tests in the greenhouse at Mandan October 1942 to February 1943, the usual isolates of P. arrhenomanes reduced stands and caused a percentage loss approximately as follows: crested wheatgrass, 60-100; proso millet 95-100; blue grama, 100; oats, 4-20; wheat, 8-30; Bromus tectorum, 20-30; smooth brome, Bromus inermis, 30-90 (very erratic, depending on condition of seed); Elymus canadensis, 30-60; Black Amber sorghum, 45-65; and Agropyron intermedium, 40. The isolate from Newell caused 98% loss in A. intermedium; 61% in wheat; and 100% in crested wheatgrass, which is unusual. This indicates that introduction of "resistant" hosts may not solve the problem in all areas and for all time.

The writer has isolated Pythium tardicrescens Vanterpool from oats in the Palouse region near Pullman, Washington, in 1942, and also from barnyard grass (Echinochloa crusgalli) from Graceton, Minnesota. The reaction of the tester hosts to both isolates was very similar to that produced by P. arrhenomanes, except that in the former, the root browning induced was possibly somewhat firmer and darker brown than that produced by P. arrhenomanes. This appears to be the first report of P. tardicrescens south of the Canadian prairies.

Extensive trials with soil emendents (fertilizers, chemicals, and bacterial infusions) have not given very much encouragement that the species of Pythium concerned can be effectively controlled by any of the numerous materials tried. Some of the fungi other than Pythium are inhibited by some chemicals, however. Seed treatments with Semesan and Spergon have proved beneficial for control of root rot on proso millet and blue grama. On such cool-temperature grasses as the wheatgrasses, smooth brome, and wild-rye, seed treatment has not been worth the effort except to inhibit seed-borne fungi. Thus, if pythium root rot only is considered, indications are that in most cases virtually as satisfactory stands are obtained from untreated as from treated seed, providing clean, plump, fresh seed is used.

At Mandan, Russian wild rye (Elymus junceus), crested wheatgrass, smooth brome, and other cool-temperature grasses escape seedling blight to a large extent if fall seeded. In some areas grasshoppers and game birds are confusing factors at that time of year. In addition winter killing was severe in fall-seeded grasses on heavy soil at Mandan during the extremely severe winter of 1942-43. Crested wheatgrass survived better than either smooth brome (Bromus inermis) or Russian wild rye (Elymus junceus) when seeded in late September.

COOPERATIVE INVESTIGATIONS BETWEEN THE DIVISIONS OF CEREAL CROPS AND DISEASES, FORAGE CROPS AND DISEASES, AND DRY LAND AGRICULTURE, BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING, AGRICULTURAL RESEARCH ADMINISTRATION, AND THE NURSERY DIVISION, SOIL CONSERVATION SERVICE, U. S. DEPARTMENT OF AGRICULTURE, AND THE NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION.

SCAB ON WHEAT AND BARLEY

WHEAT AND BARLEY SCAB IN PENNSYLVANIA: Wheat Scab [Gibberella zeae] is rather more severe than in most years. From a trace to 5% was found in most fields.

Scab was found in a high percentage of winter barley fields examined, being common but not severe in most of them. There was much more scab than usual. (R. S. Kirby, Pennsylvania State College, June 29).

WHEAT SCAB IN OHIO: Wheat scab was general in western Ohio with the percentage of heads scabbed varying from trace to 50%, partially or completely scabbed. Wheat yields as a result of winter killing and scab are very light and poor quality wheat is general. In most of western Ohio there was little difference in infection regardless of the rotation. In eastern Ohio wheat scab was most serious in corn fields that were not turned under. As a general practice winter wheat is drilled in corn stubble, although in some rotations winter wheat follows tobacco or soybeans. (C. C. Allison, Extension Plant Pathologist, July 7)

SCAB AND GLUME BLOTCH ON WHEAT IN ILLINOIS: Prospects diminished rapidly during the past 2 weeks for a high yield from the wheat remaining in the southern half of the state after the flood, because of a blighting and premature dying of unusually large numbers of plants in most fields, according to a survey just completed by G. H. Boewe, This condition is being called "water blight," and is popularly attributed to the excessive rains, but is caused by glume blotch [Septoria nodorum] and scab, which are unusually prevalent this year.

The more destructive, although not the more conspicuous, of these diseases is glume blotch. This year the greatest damage is from joint infection. Usually the second and third joints from the crown are attacked. In one field examined, 50% of the stems were diseased and about 20% of them had bent over just above the infected joint. However, in most fields stems were still standing the fourth week in June; but diseased plants could be recognized by their premature ripening or blighting. In badly diseased fields this year, 90% of the heads are affected, and many heads are entirely chocolate colored. Heads that are almost completely diseased may produce shrivelled grain if infection occurred late in the season but no grain at all if the attack began soon after heading. Greatest damage was observed in St. Clair, Washington, Marion and Clay counties. General but lesser damage was observed both north and south of these counties.

The less destructive of the two diseases is scab. It is, however, very prevalent in most fields. This year, in many instances, the entire head is blighted. (Adapted from mimeographed circular issued by Illinois Natural History Survey, June 29).

ORGANIZED SEED TREATMENT TO IMPROVE STANDS AND CONSERVE SEED A PART OF THE GOVERNMENT'S WARTIME HEMP PROGRAM

R. J. Haskell, R. W. Leukel, and C. J. Otten

America's answer to the shortage of fiber following Pearl Harbor was the setting up of goals for the production and processing of hemp. On September 19, 1942, the War Production Board authorized the construction and operation of the necessary processing mills, and in December of that year State and county USDA Boards were directed to enter into contracts with growers in Indiana, Illinois, Iowa, Minnesota, and Wisconsin for production of about 185,000 acres of fiber hemp. Forty-two new hemp mill sites were established, 11 each in Illinois, Iowa and Minnesota, with completed grower contracts for about 135,000 acres; 6 in Wisconsin ((25,000 acres); 2 in Indiana (8,000 acres), and 1 in Kentucky. These were in addition to 1 old hemp mill operating in Minnesota (1,000 acres), 1 in Kentucky (1,000 acres), and 4 in Wisconsin (7,000 acres).

Seed for 1943 planting was grown in Kentucky in 1942. Although 35,800 acres of hemp for seed were grown in that State for harvest in 1942, unfavorable growing and harvesting weather conditions resulted in low acre yields and a total production of about 23,000 bushels of seed or, at 5 pecks per acre, enough to plant 184,000 acres. Eight thousand bushels were reserved for seed production and 25,000 bushels of Chilean seed were imported by the Commodity Credit Corporation to fulfill all contracts.

In February and March of 1943, the Division of Cotton and Other Fiber Crops and Diseases, Bureau of Plant Industry, Soils, and Agricultural Engineering, conducted preliminary emergency hemp seed treatment experiments in cooperation with plant pathologists in Iowa, Wisconsin, Illinois, Kentucky, South Carolina, Mississippi, and the Division of Cereal Crops and Diseases, at the Beltsville, Maryland Station. The research laboratory of Bayer-Semesan Company, Inc., also ran trials. When the results from these tests were summarized the first week in March, they indicated a general average increase of 16% in emergence of plants from seed treated with organic mercury. In some of the tests only slightly beneficial effects were noticeable, but in others emergence was nearly doubled by seed treatment. The evidence in favor of treatment was so convincing that those in charge of the hemp fiber program decided to treat all Kentucky and Chilean hemp seed going into the new producing areas. It was thought that the improvement in stands resulting from treatment would result in the saving of the limited supply of seed.

As adequate treating facilities were not available in the Kentucky warehouses where the hemp seed was stored, it was arranged to have the cars stopped enroute to the northern counties for treating. Contracts for treating were entered into by War Hemp Industries, Inc., with hybrid seed corn companies and with a seed company at Chicago, all of which have adequate equipment and experience in seed treatment. These treating plants were at Tipton, Indiana, Tuscola, Waterman, and Monmouth, Illinois, and Reinbeck and Coon Rapids, Iowa. In addition, 3

portable treaters owned by private individuals operated at the plant sites in Indiana for treating seed used in that State and for treating the hemp seed used at one plant site in Minnesota.

At most of these treating stations, Semesan Jr. was used at the rate of 1 1/2 to 2 oz. per bu. The portable treating equipment and one treating station in Iowa used New Improved Ceresan at 1/2 oz. per bu. At the seed company in Chicago all the Chilean hemp seed was cleaned, bagged, and treated with Semesan Jr. at about 1 oz. per bu. The first car of Kentucky hemp seed to be received at any of the treating plants was at Tuscola, Illinois, April 6. The last car was received at Remington, Indiana, for reshipment to Hutchinson, Minnesota, about 7 weeks later. The last car of Chilean hemp seed was shipped from Chicago June 5 but heavy rain and floods hit the Minnesota area about this time and an additional car of seed was shipped on June 9.

At most places where treating was performed the seed was put back into the same 2-bu. (88 lb.) bags in which it was received. At the 2 Iowa treating stations, however, for the convenience of farmers in Iowa and Minnesota, the seed was resacked in new 55-lb. bags, just enough to seed one acre. Cars were loaded with from 1,600 to 2,000 bu. and with the exception of the portable treating equipment, most of the treating stations handled about one car a day without working overtime. The large treating machines were capable of treating 200 to 300 bu. per hour and the portable treaters about 75 bu. per hour.

At most treating stations those in charge of the treating removed samples of treated and nontreated hemp seed each day. Ninety-two such samples were sent to the Bureau of Plant Industry Station at Beltsville, Maryland, where they were subjected to germination tests 4 to 6 weeks later. The treatments in general resulted in improved germination.

In general, it may be said that considering the newness and emergency nature of the job of treating hemp seed, the whole treating operation proceeded efficiently and smoothly. The dust disinfectant seemed to have been thoroughly applied to 200,000 bushels of Kentucky hemp seed and to about 8,000 bushels of Chilean hemp seed at the recommended rates. No injury to any worker was reported on account of the dust hazard.

The weather during the spring of 1943 in the hemp-producing area was extremely unfavorable and the season in general was at least 3 weeks later than normal. As a result of late frosts, heavy rains and floods, approximately 9,000 acres of hemp required reseeding. On the other hand, it is believed that the acreage that required reseeding might have been considerably more than that reported had it not been for the fact that the hemp seed was treated with mercury dust, enabling it to withstand the extremely unfavorable weather conditions prevailing at and after seeding. In their effort to conserve seed, many farmers seeded at a lower rate than that recommended and adequate stands were achieved. As a result of this saving by farmers, seed was returned and made available to those areas where flood conditions prevailed, in quantities sufficient to replant about 65% of the damaged acreage.

This is probably the first time that practically the entire national supply of seed of an important crop has been subjected to seed treatment for protection from soil-borne and seed-borne organisms.

EXTENSION SERVICE AND BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING, OF THE UNITED STATES DEPARTMENT OF AGRICULTURE; AND WAR HEMP INDUSTRIES, INC.

RHODODENDRON DIEBACK AND CANKER

Freeman Weiss

Specimens of horticultural rhododendrons exhibiting wilting of the current season's shoots that eventuated in death were received from suburban districts of Washington on July 2. They were 3-year old grafted plants and had all come from one Maryland nursery. Bark necrosis extending through most of the 1942 shoot growth and usually involving its terminal node, and sometimes also entering the 1941 internode, suggested that infection by Phytophthora cactorum was the cause of the wilt and dieback. Cultures demonstrated the presence of a Phytophthora that formed papillate, occasionally proliferating sporangia, and it is tentatively referred (with the acquiescence of Dr. Charles Drechsler) to this species. As indicated, the infection appeared to center in last year's shoot growth, the terminal bud of which had this year produced 6 to 8 normal leaves before growth was occluded from below. There was no evidence of infection through the growing point or foliage of 1943 with basipetal progress of the pathogen. Circumstantial evidence indicated that the fungus perennated in the 1942 internode.

Besides Phytophthora, there were produced on portions of bark immersed in water, numerous conidia borne in acervuli characteristic of Gloeosporium. Immature acervuli also were found on the specimens, being especially numerous in cankers at the end of the 1941 internodes. These cankers were distinguished by constriction of the twig and by transverse and irregular cracking of the bark. In a moist atmosphere these acervuli erupted salmon-pink tendrils consisting of aseptate cylindrical conidia ranging from 12 to 16 x 4.5 to 5.5 microns; the conidiophores were slender and tapering, 18 to 20 x 4 microns, and some of the acervuli bore irregularly disposed dark setae 35 to 80 by 5 to 6 microns. The fungus appears to be Glomerella cingulata in its conidial stage, and it seems to have been parasitic to some degree in this instance, though it subsequently overgrew the foliage and succulent portion of the shoots saprophytically.

A second instance of Phytophthora dieback affecting shoots of the current season, and apparently originating in the flower stalk of the previous year, was encountered in a rhododendron specimen received from New Jersey. In this specimen, also, an apparently identical Gloeosporium was sporulating on cankered areas of the older wood below the visible limits of Phytophthora infection.

No previous record of the occurrence of Glomerella cingulata on Rhododendron has been found, though L. M. Massey reported a canker of this host caused by Gloeosporium sp. in 1928; however the conidial dimensions of that fungus were well below those of the present specimen. A leaf spot of Rhododendron ascribed to Gloeosporium rhododendri Briosi & Cav. occurs in Europe, and has been reported in Maryland. There is nothing in the descriptions of the latter to distinguish it from the conidial stage of Glomerella cingulata.

DIVISION OF MYCOLOGY AND DISEASE SURVEY.

DISEASED MAPLES IN MASSACHUSETTS

Malcolm A. McKenzie

During the month of June, maple trees at widely scattered points throughout Massachusetts have shown sudden wilting, brown foliage and defoliation. Damage ranges from death of branches to entire trees. The number of trees found to be involved this year is exceptionally large compared with the usual number injured annually by diseases of foliage or other parts. Some affected trees have been found in every city and town where inspections have been made. Norway maples in particular, and sugar maples to a somewhat lesser degree are commonly injured. From specimens collected throughout Massachusetts several diseases and defects have been identified.

Leaf injury resulting from sun scorch and infection by leaf-spot fungi has been prevalent. Cankers caused by Cytospora sp. are numerous on many trees examined. This fungus is thought to develop extensively only on trees of low vitality, and examination of diseased trees in full foliage upon which cankers were found revealed that the canker fungus must have been present before leaf development started this year. Search for a predisposing condition indicated that there was considerable drying out of tissues probably associated with ice-storm breakage and other winter conditions.

However, the sudden appearance of wilted branches on some trees suggested that the wilt fungus (Verticillium sp.) might be a cause of trouble and tissue plantings in artificial culture media from green streaks in wood of diseased trees proved this to be the case. The presence of this fungus has not been proved by cultures in all instances where it is suspected as the cause of primary injury, but this is understandable in cases where entire trees have not been removed. At present, it appears that several diseases are causing injury to maples but the most destructive one found is the wilt.

Although the number of trees known to be affected in Massachusetts since the hurricane has been larger than previous to 1938, the number found this year represents the most conspicuous increase in many years. MASSACHUSETTS STATE COLLEGE. July 2

BRIEF NOTES ON PLANT DISEASES

UNUSUAL OCCURRENCES OF SOME VEGETABLE DISEASES: Spinach Rust in Colorado -- I believe that orange rust on spinach is rather rare, and I am sure that I have never seen it on the market before. From 10 to 30% of the leaves of some commercial lots of spinach grown near Denver, Colorado, were more or less severely spotted with the orange cluster cup stage of Puccinia aristidae (P. subnitens) during June.

Anthracnose of peas in Louisiana -- Speaking of uncommon diseases, I might also mention that anthracnose of peas due to Colletotrichum pisi occurred in small garden plots in Louisiana during May. (G. B. Ramsey, Division of Fruit and Vegetable Crops and Diseases. June 30)

VIRUS DISEASE OF RED CURRANTS IN OHIO: Leaves of red currants with symptoms similar to those described by Hildebrand (in Phytopathology 29: 369-371, 1939) as a new virus disease, were received from southwestern Ohio near Cincinnati. Later, on June 23, another planting of red currants was observed near Cincinnati with 5% of the plants showing similar symptoms. In both cases the disease was observed by the grower in 1942, and the percentage of affected plants had increased in 1943. (C. C. Allison, Extension Plant Pathologist. July 7)

STRAWBERRY RED STELE IN NEW YORK: A few severe cases of red stele [Phytophthora fragariae] were observed in strawberry plantings on clay soils in the Tivoli area of Dutchess County. (A. T. Williams, Weekly News Letter, May 31)

WHEAT DISEASES IN PENNSYLVANIA: Stem rust (Puccinia graminis) was first observed on June 23, occurring in many fields in Southeastern Pennsylvania. Stem rust this year is light and came so late that it will cause little damage. It was first found on barberry on May 15. (D. J. Fitchett and R. S. Kirby, June 29)

Leaf rust (Puccinia rubigo-vera tritici) came a little later this year and while it is severe in many fields it is not so destructive as in 1942.

In the fields observed to date there is less bunt (Tilletia sp.) than for many years.

About 1/2% of take-all (Ophiobolus graminis) was found in one field in Northampton County on June 30. (R. S. Kirby, Pennsylvania State College, June 29)

FLAG SMUT IN THE STATE OF WASHINGTON IN 1943: A limited survey of the flag-smut-infested area was made during the fourth week of June. Fifty-five fields in the Goldendale area were examined and flag smut [Urocystis tritici] was found in 33 of them. This compares with 58 fields surveyed last year with 27 showing flag smut. In other words, the prevalence in the infected area is about the same this year as last.

Regarding severity of infection, the smut was present only in trace amounts in the majority of fields, although small areas in some of the fields had measurable percentages. In one field of Hybrid 128, an area about one acre in size averaged 25% infection. (C. S. Holton, Division of Cereal Crops and Diseases)

REPORT ON SURVEY TRIP THROUGH UPPER SACRAMENTO VALLEY [CALIFORNIA] ON JUNE 1 AND 2: This and previous surveys establish the fact that stripe [Helminthosporium gramineum] is present in one-fourth of the barley fields in the Sacramento Valley, thus making it a real threat for 1944. Of 53 barley fields examined, 12 showed stripe, with a maximum of 60% in one field in Tehama County. These fields were Coast, Club

Mariout, or Atlas. A trace of stripe was found in one field of Tennessee Winter, the dominant variety in the area. No Vaughn barley was seen. Coast-Mariout mixtures are very common in the upper valley, occurring in all possible proportions. Covered smut [Ustilago jensenii] was seen in 12 fields, only 6 of which were in combination with stripe. The maximum smut percentage was 15. The barley crop suffered much from dry north winds, particularly around May 21 to 24. Shatter losses ranged up to 15% and all early barley is more or less pinched. In fact, this period of extremely unfavorable weather probably reduced the total barley yield for the valley to 20%. Late barley along the river (still green) is better than average. Harvest of commercial barley fields in this valley started June 1.

More oats than usual are being grown for grain in the Sacramento Valley. Moderate damage from crown rust [Puccinia coronata] and occasional damage from stem rust [P. graminis] was seen. Most of the oats is windrowed to avoid shatter loss. (From report by C. A. Suneson and Sylvia C. Santoni, Cereal Crops and Diseases, received June 10, 1943.)

BACTERIAL WILT OF SWEET CORN IN PENNSYLVANIA: Bacterial wilt (Bacterium stewartii) is starting to appear in many sweet corn plantings. It was first observed on June 15. (R. S. Kirby, Pennsylvania State College. June 29)

ASH RUST IN NEW ENGLAND: New Hampshire -- Ash rust (Puccinia peridermiospora), usually common in the Hampton area, is abundant there again this year, and a heavy infection of the white ash at Durham has also been noted during the past week. Rust coupled with anthracnose (Gloeosporium americanum) is expected to cause heavy defoliation within the next 2 weeks. (M. C. Richards, University of New Hampshire)

Massachusetts: Rust is the chief cause of the complete or partial defoliation of red, green, and possibly other species of ash reported from certain parts of Massachusetts during June. Damage is usually confined to trees near salt marshes where the grass hosts (Spartina) of the alternate stage are abundant. (Malcolm A. McKenzie, Massachusetts State College. July 2)

POWDERY MILDEW ON DORONICUM IN CALIFORNIA: On January 18 a powdery mildew was noted on plants of Doronicum plantagineum in a nursery in Berkeley. D. G. Milbrath of the California State Department of Agriculture, and C. E. Yarwood of the Agricultural Experiment Station, determined the fungus as Erysiphe sp. No perithecia were found but according to Dr. Yarwood the mildew was of the conidial type of E. cichoracearum. Thus far I have found no other record of a powdery mildew on this host. (Milton R. Bell, California State Department of Agriculture. June 15)

TOBACCO BLACK SHANK IN VIRGINIA: Yesterday we received tobacco specimens from Charlotte County that appear to be affected with black shank [Phytophthora parasitica var. nicotianae]. The County Agent stated that practically all the plants in the field from which these came showed infection and that other fields in the County showed the same trouble. We know that black shank is present in 2 or 3 adjoining counties and that it has caused very heavy losses in some fields. (S. A. Wingard, Virginia Agricultural Experiment Station. June 22)

WANTED: INFORMATION ON THE OCCURRENCE OF WHEAT AND BARLEY SCAB: In this issue 3 States report unusual amounts of scab. The Survey would appreciate reports from other areas. This must have been a very favorable season for its development in many regions.

Reports on other diseases of cereals would also be welcomed.

CORRECTIONS: On page 204 of the May 15 issue (No. 9), the last sentence of the second paragraph should read: "Production of early potatoes in 1942 was 13 percent above 1941 and 37 percent above the 10-year average." On page 205, in Table 1, first column, add to New Jersey "(early crop and late)". In Table 2, the figures for acreage harvested in the United States in 1941 and 1942 are transposed and should read 1941: 2215, 1942: 2226, instead of the reverse as printed.

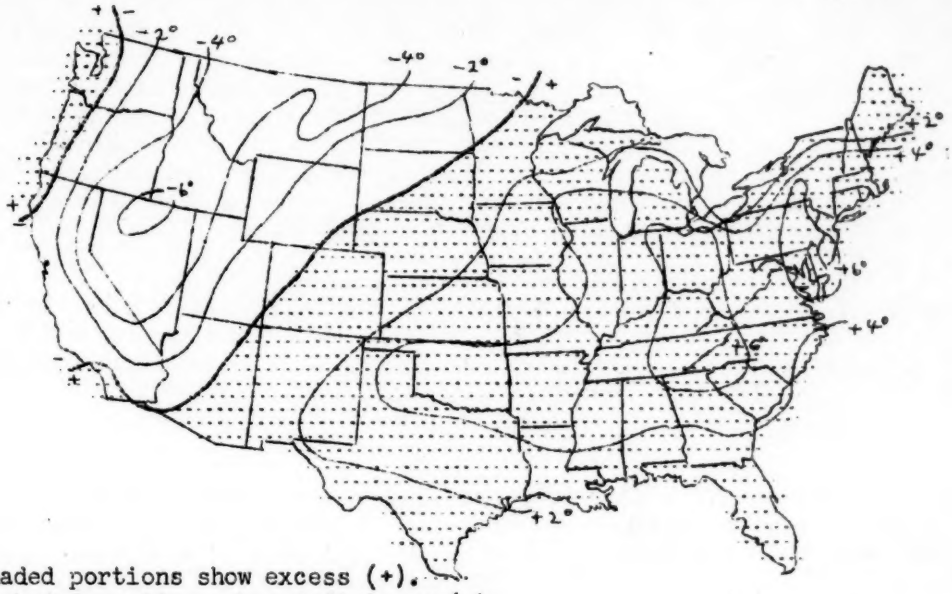
On page 221 of the Reporter for June 1/15 (No. 10/11), Figures 1 and 3 refer to June 8, Figures 2 and 4 to June 1, instead of the reverse as indicated.

JUNE WEATHER

(From U. S. Department of Commerce, Weather Bureau, Weekly Weather and Crop Bulletin for the week ending July 6, 1943)

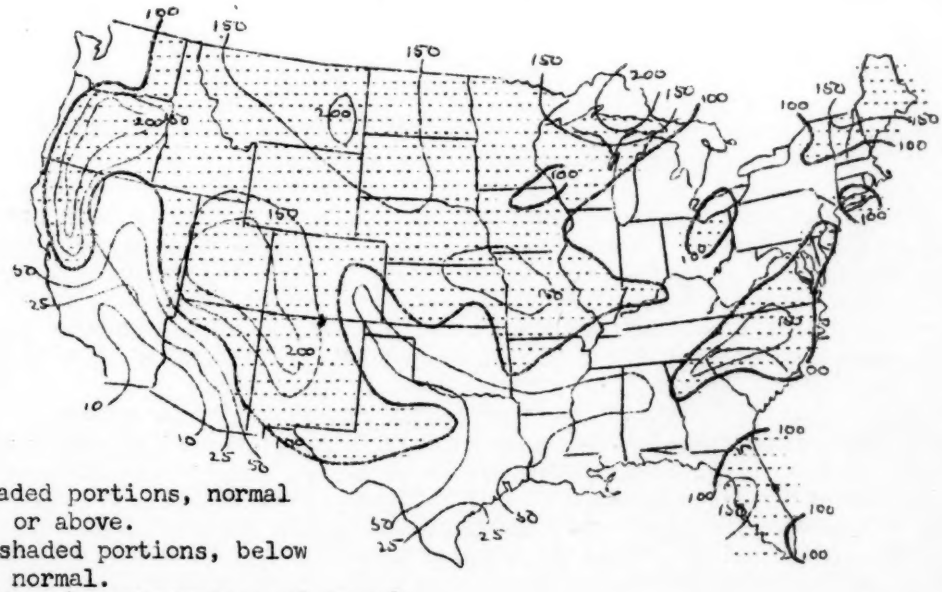
June was decidedly warmer than normal in the central and eastern portions of the country and colder than usual rather generally west of the Rocky Mountains. Fig. 1 shows that the monthly mean temperatures averaged from 2° to more than 6° above normal practically everywhere over the eastern half of the United States while in most of the far West the minus anomalies were of about the same magnitude. The latter part of the month was especially warm in Eastern States.

Fig. 2 shows that east of the Mississippi River limited areas had above-normal precipitation, but the monthly totals, in general, were subnormal. Rainfall was scanty also in the west Gulf area and almost entirely absent in a considerable far southwestern section. On the other hand, there was generally more than normal from the northern half of the Mississippi Valley westward to the Pacific coast. Some central districts and northwestern Plains localities had more than twice the normal rainfall for the month.



Shaded portions show excess (+).
Unshaded portions show deficiency (-)
Lines show amount of excess or deficiency

Fig. 1. Departure of Mean Temperature from Normal, June 1943



Shaded portions, normal or above.
Unshaded portions, below normal.
Lines show percentage of normal.

Fig. 2. Percentage of Normal Precipitation, June 1943